An X-Band Satellite Ground Station for the State of Louisiana
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The X-BAND ground station system is operational at LSU. The 4.4 m auto-tracking antenna captures environmental satellite data from the NASA MODIS sensors (onboard both Terra and Aqua satellites), the Indian government's Ocean Color Mapper (OCM onboard Oceansat-1), and Synthetic Aperture Radar (SAR) data from RADARSAT International. We obtain satellite imagery and measurements daily covering most of the continental U.S., the Gulf of Mexico and beyond. The new X-band antenna capture and processing system has already proven valuable for emergency response management and training, for research and education. Researchers and managers at LSU and the State of Louisiana are using these measurements and imagery to detect, monitor and study environmental conditions of the atmosphere, land (especially coastal) and Gulf of Mexico. The real-time MODIS imagery are displayed on the Earth Scan Laboratory home page (http://www.esl.lsu.edu) and updated daily by undergraduate LSU students.

Activities undertaken in the past year using the X-BAND system include the following:

- Hurricane and tropical storm surveillance. In combination with other sensors, the MODIS data were used to monitor developments and movements of T.S. Isidore and Hurricane Lili in the Gulf of Mexico and along the Mexican coastline (In collaboration with the Louisiana Office of Emergency Preparedness, NOAA, Southern Regional Climate Center).

- MODIS data have been used for air quality assessments and feasibility studies for ozone, haze, aerosols, and fog (in collaboration with DEQ, Port of Lake Charles and Minerals Management Service)

- MODIS data have been used for fire detection and surveillance over Louisiana (in collaboration with Louisiana Office of Emergency Preparedness, Southern Regional Climate Sensor).

- MODIS data have been used to determine coastal circulation in support of oil spill response activities (in collaboration with NOAA HAZMAT and local industry)

- MODIS and OCM data have been used to study the movement of river waters and algal blooms that develop in Louisiana's river diversion projects including Caernarvon, Davis Pond, Lake Pontchartrain and the Atchafalaya region (in collaboration with DNR, the LSU PULSES project, Jefferson Parish Environmental, the NOAA Coastal Ocean Program and EPA)

- MODIS and OCM are being used to research marsh changes in coastal Louisiana (LSU graduate student project)

- MODIS and OCM are being used in feasibility studies to calibrate/validate numerical models of circulation, sediment transport and waves along the Louisiana coastline (Faculty at the Coastal Studies Institute).

- MODIS and OCM are being used to map and understand habitats of infectious diseases in Louisiana and the southeast U.S (LSU Veterinary Science Dept.)

In addition to the above, this new facility has already helped to leverage funding from Federal and State sources for research and management of the environment. These include NASA (in collaboration with Southern University), National Institute of Health, National Science Foundation, Minerals Management Service, Dept of Environmental Quality, Dept. of Natural Resources, NOAA Coastal Ocean Program, Environmental Protection Agency and the Board of Regents. The new facility was featured in the Morning Advocate, Science and Technology page on February 10, 2003 (see www.esl.lsu.edu for easy access to article).